

What is claimed is:

1. A pressure pulser comprising:
  - a first rotatable body in fluid communication with a flowing fluid;
  - a second body coupled to said first body and at least partially disposed within an electroactive fluid; and
  - a means for applying a field to the electroactive fluid.
2. The pulser of claim 1 wherein said first body is a mud motor.
3. The pulser of claim 1 wherein said second body comprises a shaft and said means for applying a field includes an electromagnetic coil.
4. The pulser of claim 1 wherein said second body is pump rotor circulating the electroactive fluid through a flowline.
5. The pulser of claim 4 further comprising a field-generating valve disposed on the flowline, wherein said valve has a blocked position where a field is applied to the flowline.
6. The pulser of claim 4 wherein the pulser is integrated into a drill string.
7. A method for generating a pressure pulse comprising:
  - disposing a first rotatable body in flowing fluid;

coupling the first body to a second body disposed in an electroactive fluid;  
applying a field to the electroactive fluid.

8. The method of claim 7 wherein the field is applied by applying a current to an electromagnetic coil.
9. The method of claim 7 wherein the field is applied by a magnetic circuit.
10. The method of claim 7 wherein said first body is a mud motor.
11. The method of claim 7 wherein said second body comprises a shaft and an electromagnetic coil.
12. The method of claim 7 wherein said second body is pump rotor circulating the electroactive fluid through a flowline.
13. The method of claim 12 further comprising a field-generating valve disposed on the flowline, wherein said valve has a blocked position where a field is applied to the flowline.
14. The method of claim 7 wherein the first and second bodies are integrated into a drill string.

15. An apparatus for generating a pressure pulse in a column of circulating fluid, the apparatus comprising:

- a first rotating member disposed in the column of circulating fluid;
- a chamber containing an electroactive fluid isolated from the circulating fluid;
- a second rotating member attached to said first rotating member and at least partially contained within said chamber of electroactive fluid;
- a magnet proximate to said chamber of electroactive fluid and switchable between first and second states so as to apply a field to the electroactive fluid in the first state and not apply a field to the electroactive fluid in the second state.

16. An apparatus for generating pressure pulses in a column of circulating fluid, the apparatus comprising:

- a housing adapted for communicating the circulating fluid therethrough;
- a first body in said housing and adapted for rotation in the circulating fluid;
- a chamber in said housing and enclosing an electroactive fluid; wherein said chamber is isolated from the circulating fluid;
- a second body in said housing and connected to said first body; wherein said second body is at least partially disposed within said chamber and has an outer surface in contact with said electroactive fluid; and
- a magnet switchable between a first state applying a field to the electroactive fluid and a second state not applying a field to the electroactive fluid.

17. The apparatus of claim 16 wherein said first body is a mud motor.
18. The apparatus of claim 17 wherein said second body is a shaft.
19. The apparatus of claim 17 wherein said second body is a Moineau pump.
20. The apparatus of claim 16 wherein said magnet is an electromagnet.
21. The apparatus of claim 20 wherein said first body is a mud motor and said second body is a shaft.
22. The apparatus of claim 16 wherein said magnet is a permanent magnet.
23. The apparatus of claim 16 wherein said first body is a rotor and said second body is a shaft.
24. The apparatus of claim 23 wherein said second body extends through said chamber and is connected to a motor.